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(58) Field of search
C3N

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**(54) Improvements in and Relating
to Board Products and Mouldings**

(57) A composition for the
manufacture of building boards and
mouldings, especially boards and
mouldings for fire protection,
comprising potassium silicate and/or
sodium silicate, light weight

aggregate and cellulosic fibres.
Preferred light weight aggregates are
vermiculite and/or pulverised fuel ash
cenospheres. The cellulosic fibres may
be first dispersed in a solution of
potassium silicate and/or sodium
silicate before adding the resultant
liquid dispersion to the dry
ingredients.

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SPECIFICATION
Improvements in and Relating to Board
Products and Mouldings

This invention relates to a novel composition
 5 for boards and mouldings of the type which in the
 past have comprised light weight aggregate and
 potassium silicate or sodium silicate binder.

Typical light weight aggregates include
 vermiculite, perlite, and pulverised fuel ash
 10 cenospheres and are usually inorganic.

The usual process for manufacturing this type
 of board or moulding normally involves the use of
 potassium or sodium silicate in solution with
 water, and usually includes the steps of mixing,
 15 pressing and stoving.

This type of board or moulding is used for a
 variety of applications but is especially suitable for
 fire resistant and high temperature insulation
 applications. This type of board or moulding does
 20 however have the disadvantage of being friable,
 which results in excessive breakages in handling,
 transportation and application, and also in the
 product not being suitable for application
 methods which involve mechanical means such
 25 as drilling, screwing, the use of clips and brackets
 and so on.

The usual methods of application for these
 materials have in the past included the use of wet
 cements or adhesives, and have become much
 30 less attractive because of the messy nature of the
 process, and many skilled applicators of these
 materials now prefer to avoid the use of wet
 cements or adhesives and to use instead
 materials which can be fixed by mechanical
 35 means.

According to the present invention a
 composition is provided for the manufacture of
 boards and mouldings, comprising potassium
 silicate and/or sodium silicate, light weight
 40 aggregate and cellulosic fibres, which will be
 more suitable for application by mechanical
 means. The ingredients are preferably present in
 the following proportions by dry weight:

	%
45 Potassium silicate and/or sodium silicate	3—25
Light weight aggregate	55—95
Cellulosic fibres	$\frac{1}{2}$ —20

The particularly preferred proportions are in the
 50 ranges 7—20%, 80—90%, and 2—8% by weight
 respectively.

The preferred maximum amount of cellulosic
 fibre when the application is to be a fire resistant
 one is 5%.

55 The density of the resultant product made from
 this composition will ordinarily have a density in
 the range 300—800 kg/m³.

It is preferable in the mixing operation to first
 60 disperse the cellulosic fibres in the potassium
 and/or sodium silicate solution and then to add
 this liquid dispersion to the dry ingredients in the
 mixer.

An example of a preferred composition
 according to this invention is as follows by dry
 65 weight:

	%
Potassium silicate and/or sodium silicate	15
Vermiculite and/or pulverised 70 fuel ash cenospheres	81
Cellulosic fibres	4

The advantage of boards and mouldings made
 in accordance with this invention lies in their
 increased toughness and better suitability for
 75 application or installation using mechanical
 methods, such as drilling, screwing, use of clips,
 brackets and so on, and also in much reduced
 breakages in handling, transportation and
 application.

80 Claims

1. A composition suitable for the manufacture
 of building boards and mouldings comprising
 potassium silicate and/or sodium silicate, light
 weight aggregate and cellulosic fibres.

85 2. A composition as claimed in Claim 1 in
 which the light weight aggregate is vermiculite
 and/or pulverised fuel ash cenospheres.

3. A composition as claimed in Claim 1 in
 which the ingredients are present in the following
 90 percentages by dry weight:—

	%
Potassium silicate and/or sodium silicate	3 to 25
Light weight aggregate	55 to 95
95 Cellulosic fibres	$\frac{1}{2}$ to 20

4. A method of making building boards or
 moulding from compositions as claimed in any
 preceding claim, which includes the steps of
 mixing the ingredients, pressing and stoving or air
 100 drying.

5. A method of mixing the moulding
 compositions as claimed in Claims 1 to 3 which
 includes the step of first dispersing the cellulosic
 fibres in a solution of potassium silicate and/or
 105 sodium silicate and then adding this liquid
 dispersion to the dry ingredients.

6. Building boards or mouldings made from
 compositions as claimed in Claims 1 to 3.